Dugway Proving Ground
Restoration Advisory Board Meeting

May 12, 2008
Dugway Proving Ground
Dugway, Utah

PROJECT UPDATES

Keller Davis - Shaw Environmental, Inc.

Remediation Activities

- HWMU Status Update
- Groundwater Monitoring
- HWMU 9 Ordnance Disposal

HWMU Status Update

- **HWMU Closures Approved/Response Complete**
  - 39 Total HWMUs closed: HWMUs **2,** 7, **14,** 20, 30, **33, 34, 36, 37, 38, 39, 40, 42, 43, 46, 47, 48, 51, 55, 59, 63-1/2, 90, 99, 124, 128, 130, 158,** 160, 161, **162, 163**, 164, **165,** 166, **167, 168, 169,** 170 and **190**
- **HWMU Construction Complete; Closure Pending**
  - HWMU **58**
- **HWMU Closure Activities in Process**
  - HWMU **9**

Groundwater Monitoring

Groundwater Management Areas

Regional/Holistic Approach

- Divide DPG into regions based on hydrogeology
- Focus on worst case contamination
  - Higher concentrations
  - Larger plumes
  - Migrating vertically
- Define consistent monitoring program
  - Standardized across region (vertical, horizontal, and temporal)
  - Target analyses to known contaminants
- Define exit strategy

Ditto GMA

- Year 0 Activities (completed):
  - High Frequency Water Levels every 15 minutes at 5 wells
  - Quarterly water levels from all wells across Ditto
  - Install shallow and deep source area wells
  - Validate plume migration models proposed in the plan
  - Propose sampling schedule to coincide with annual high (May) and low (October) water table
  - Propose downgradient well locations
- **Year 1 Activities (current):**
  - **Install downgradient wells**
  - **Conduct semiannual sampling at source area and downgradient wells**
  - **Conduct annual water levels**
  - **Report findings**

Carr, Downrange, EV GMAs

- Currently in Year 0
  - Collecting water levels (HFWL and quarterly)
  - Installing source area wells
  - Validating plume migration models
  - Proposing downgradient well locations

Ditto Year 0 Results

- High Frequency Water levels showed annual high water table occurs in May; low water table occurs in October
- Quarterly water levels detected and quantified anthropogenic water table impacts (a.k.a. ‘groundwater mounds’)
- Plume modeling validated the downgradient well locations proposed in the plan

Ditto GMA Year 1 Results

- October 2007 Semiannual sampling event
  - Timed to coincide with low annual water table
  - Shallow source area wells sampled at HWMUs 36 and 38 and SWMUs 97, 133, and 177
- May 2008 Semiannual sampling event
  - Timed to coincide with high annual water table
  - Will include shallow and deep source area and downgradient wells
  - Scheduled for May 19 – May 30

Ditto GMA Year 1 Results

Shallow Source Area Wells

		Historic Results			October 2007 Results		
Site	Contaminant	Concentration	Well	Unit	Concentration	Well	Unit
HWMU 36	TCE	1,790 ug/L	MW02	Clay 1/Sand A	130 ug/L	MW12	Sand A
	Chlorobenzene	5,820 ug/L	HP60	Sand A	1,600 ug/L	MW14	Sand A
HWMU 38	PCE	1,730 ug/L	MW02	Clay 1/Sand A	16 ug/L	MW06	Sand A
SWMU 97	TCE	3790 ug/L	TW08	Sand B	1,300 ug/L	TW08	Sand B
SWMU 133	PCE	18.5 ug/L	TW07	Sand A	51 ug/L	TW07	Sand A
SWMU 177	PCE	220 ug/L	MW01	Sand A	37 ug/L	MW01	Sand A

HWMU 9 Ordnance Disposal

HWMU 9 Ordnance Disposal

Acronyms and Terms

- UXO = Unexploded Ordnance
- M55 Rocket = Chemical warfare rocket filled with nerve agents
- MPPEH = Material Potentially Presenting an Explosive Hazard
- MEC = Munitions and Explosives of Concern
- MC = Munitions Constituents
- MD = Munitions Debris
- QASAS = Quality Assurance Specialist (Ammunition Surveillance)
- SUXOS = Senior UXO Supervisor

HWMU 9 History

- 36,000 M55 Rockets destroyed (burned) during test at West Granite Holding Area (SWMU 192)
- Debris reportedly inspected and submerged in caustic bath prior to disposal (HWMU 7)
- Estimated 396 rocket pieces and residual explosives were never disposed and remain at HWMU 9

HWMU 9 M55 MPPEH

HWMU 9 M55 MPPEH

Fuze
(RDX)

Burster Tube
60% RDX
40% TNT

Shaw HWMU 9 Operations

Detonation Chamber and Jet Perforators used to destroy MPPEH

- Chamber constructed with Jersey barriers (“K” rails) and reinforced steel cover (removable) to contain kick outs
- UXO Techs inspected rocket residue pile and made MD/MPPEH determination
- MD sorted for later certification and verification
- MPPEH transferred to Detonation Chamber for demolition
- UXO Techs confirm destruction and stage resulting MD in lockable container pending DPG verification

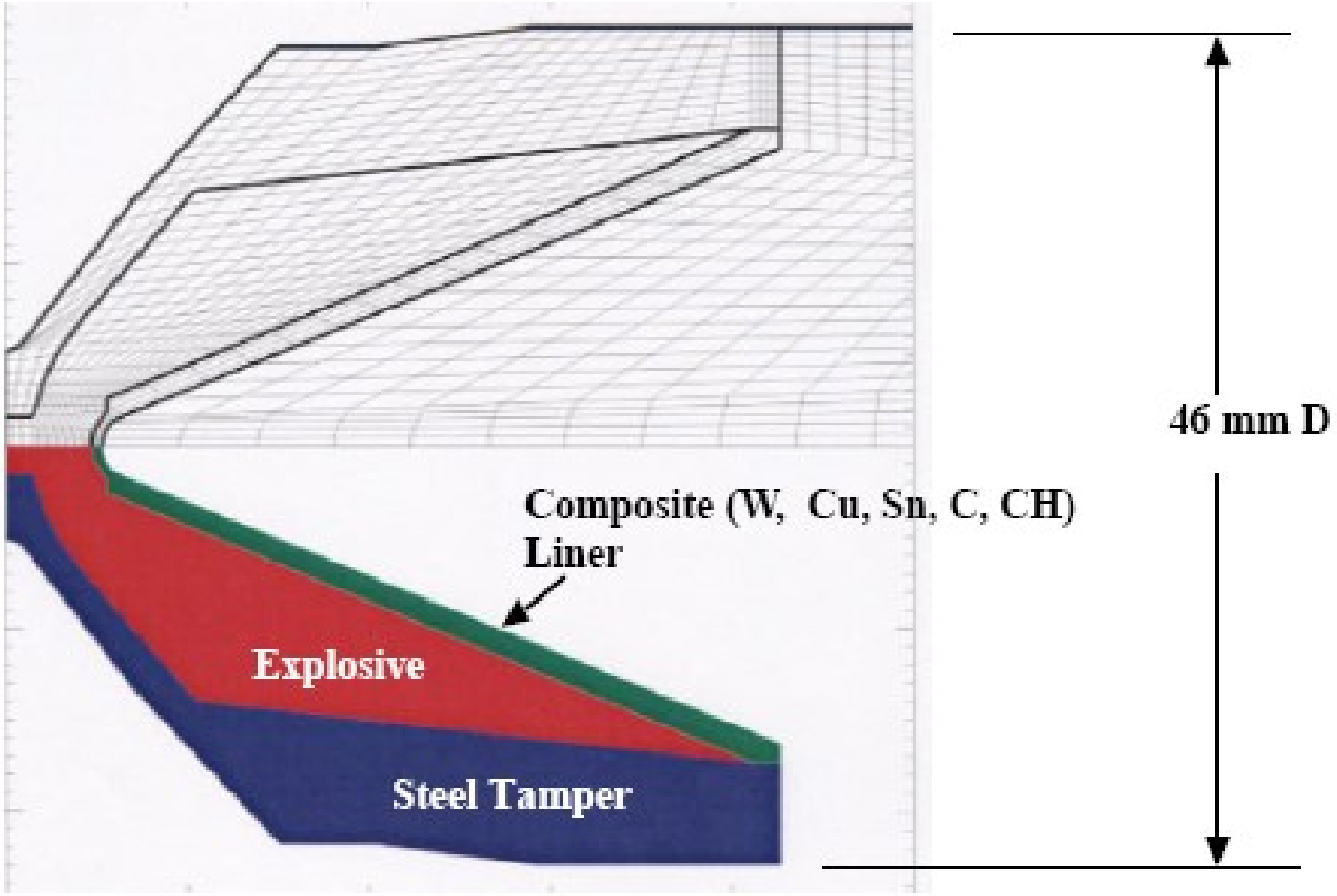
HWMU 9 Detonation

Jet Perforators

- Used in well industry to perforate casing after it is installed
- Directional (“shaped”) charge focuses explosion in one direction
- Controlled results with less donor explosive

  12g (<0.5 oz) explosives in each perforator

Jet Perforator



Jet Perforator

Jet Perforators

Shot Set-up

HWMU 9 Disposal Coordination

- Following destruction, MPPEH inspected by UXO team (1st inspection)
- Items successfully destroyed are removed from chamber and placed in temporary holding cell
- When holding cell is full, Shaw SUXOS inspects every item to verify all explosives are destroyed (2nd inspection)
- Following Shaw SUXOS verification, the DPG QASAS inspects every item and certifies all explosives are destroyed (3rd inspection)
- Following certification, items are placed in locked container awaiting disposal
- Containers remained locked until opened at hazardous waste landfill for load inspection and direct burial in landfill

HWMU 9 Totals

489 pieces MD certified

4,716 pieces MPPEH destroyed

5,205 total items disposed

- 142 total shots
- 24 days of operation
- 23,000 pounds MD disposed as F999 hazardous waste

Questions?